

Guidance for preparing a

FACILITY PLAN

for

State Revolving Fund Projects

INTRODUCTION

Facility Planning is the first major activity undertaken by a potential borrower as a prerequisite to obtaining loan assistance through the State Revolving Fund (SRF) loan program. It is considered by many to be the most complex aspect of the program; primarily because of the subjective interrelationships between engineering feasibility, economic and environmental considerations, public acceptance, and institutional arrangements necessary for project implementation. Facility Planning is a systematic study of the need for new, expanded, or upgraded wastewater facilities in the local community.

An Environmental Information Document is generally prepared in conjunction with a Facility Plan. This document identifies any environmental impacts that would result from implementing the project recommended in the Facility Plan. Specific guidance on preparing an Environmental Information Document is available separately.

CONTENTS

The following sections describe the contents of a Facility Plan using a suggested outline for presentation of the required information. This format is not mandatory, however, reviewers are familiar with this format and will be able to locate required information more easily. The use of the suggested format will help expedite the review process.

CHAPTER 1: SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

This section should contain a brief summary of the problem and the recommended solution. Specific information on any facilities proposed for construction should include process, design flow, effluent limits, and cost.

CHAPTER 2: STUDY PURPOSE AND SCOPE

The Facility Plan must address the need for wastewater collection and treatment for the local community. The study should be based on an identified *Planning Area* and a specific *Planning Period*.

The Planning Area needs to be identified in the Facility Plan and a map showing its boundaries should be included. The planning area should include all areas that may be served by the project during its design life.

There is a tendency for communities to limit the planning area to the corporate limits (or Sewer District boundaries), however this frequently leaves out areas that might economically be served by the project. While local governments are not required to provide service to areas outside their boundaries, they may if they choose to do so. The planning area should also be based on the possibility that the local community will extend its boundaries in the future and may wish to provide sewer service to areas not presently in the

corporate limits.

The Planning Period is generally considered to be twenty years and is based on the expected life of most mechanical treatment processes. The planning period should not be less than twenty years, however longer planning periods may be considered for communities with little population growth. While the minimum planning period is twenty years, the Facility Plan may recommend that construction be phased with the initial phase designed for a shorter period if that approach is more cost-effective.

CHAPTER 3: EFFLUENT LIMITS

The Water Quality Management Plan should include flow, effluent limits, and receiving stream information for each municipal discharge in Louisiana. This information is generally in the form of an inventory of existing discharges and may not take into account the additional flow due to population growth during the planning period.

Some communities may have more than one choice of possible discharge locations and in some cases this may result in different effluent limits. The possibility of relocating a discharge to avoid stringent treatment levels should be considered in the cost-effective analysis.

Information in the Facility Plan must agree with the information in the approved Water Quality Management Plan. If any of the flow, effluent limits, or discharge location information which is part of the recommendations in the Facility Plan is different from the information in the Water Quality Management Plan (or if the Water Quality management Plan has no information for the community), then it must be updated before the Facility Plan can be approved.

In some cases a "no-discharge" facility may be proposed, such as an irrigation type of land application system. Such facilities may have a discharge during prolonged periods of wet weather, or if maintenance to the system requires a temporary effluent discharge. A permit with specific effluent limits may be required even when no discharge is planned.

CHAPTER 4: EXISTING CONDITIONS

This section will include an analysis of any existing wastewater collection and treatment facilities in the planning area, and must also include a study of any socioeconomic, environmental, or any unique features of the area that may influence the selection of the recommended plan.

For any and all existing collection systems that will be included in the project or that serve a treatment plant that is a part of the project (including collection systems not presently owned by the loan applicant) a study must be conducted to demonstrate that these collection systems are not subjected to excessive infiltration/inflow. If the study reveals that infiltration/inflow is excessive, then a rehabilitation project is usually recommended. Specific guidance on demonstrating that infiltration/inflow is not excessive is available separately.

Any existing treatment facilities should be described and their performance evaluated. The possibility of incorporating existing treatment facilities in the recommended plan should be considered in the cost-effective

analysis.

Existing wastewater flows should be documented through flow measurements, metered water consumption, and any other available records. Existing flows may include residential, commercial, and industrial; and may include several components such as base flow and infiltration/inflow. Existing per-capita flows will be the basis for projecting future residential flows.

Some topics which describe existing conditions in the planning area and which may influence the selected plan are listed below. Those that must be addressed are indicated by an asterisk; others should be included if relevant.

- * Surface and groundwater (include map)

- * Topography and soils (include map)

- * Precipitation and temperature

Air quality

Noise levels

Energy production and consumption

- * Population

- * Land use and development (include maps showing locations of developed areas, wetlands, floodplains, coastal zones, and prime agricultural lands)

Organizational context (if more than one governing body is included in the project)

Historic and archaeological sites

Note that the Facility Plan should include any information on the above topics that may influence the selection of the recommended plan. The Environmental Information Document may require a more detailed discussion of these as well as other topics.

CHAPTER 5: FUTURE CONDITIONS

Forecasts of future conditions should be based on the twenty-year planning period. The design life or useful life of the treatment works proposed may be shorter or longer than twenty years, based on the results of the cost-effective analysis.

An accurate projection of future population is the most important element in determining future wastewater flows. Historical population growth information may be used to help in making population projections. Other information that may affect population growth and that should be considered might include the following:

Use of past census information may result in erroneous projections if some of the increase in population is due to annexation of populated areas rather than normal growth. Past annexations and the potential for future annexations should be considered when making projections.

Barriers may restrict growth in one or more directions. Some barriers may include large rivers, wetlands, corporate limits of another municipality, or even state boundaries.

Any known future events that may influence population growth should be considered. Construction of a new highway through the area could increase the growth rate. A new bridge across a large river could cause a formerly inaccessible area to become a "bedroom community" to a larger municipality. The location of a new industry in the area may cause a population increase, while closure of an existing industry would have the opposite effect.

It is a Federal requirement of the SRF Program that population projections in facility plans be in substantial agreement with the population projections in DEQ's Air Quality Implementation Plan (AQIP). The DEQ AQIP uses as its data source the population projections provided by the LSU Population Data Center (LPDC), which can be found on the Internet at www.state.la.us/census/, clicking on LSU Population Data Center, then on LPDC Data Products, then on LA Population Projections to 2020. The LPDC data is by parish only, and it is expected that realistic population projections for villages, towns, cities or sewer districts might differ considerably from parish data in terms of percentage population change expected. If this is the case, the consultant should explain the circumstances and provide relevant data to justify a population projection that substantially differs (in terms of percent) from the LPDC projection for the parish. Please contact the DEQ project engineer if further guidance is needed.

An accurate forecast of future wastewater flows will be needed before a facility can be selected or designed. Projections of future wastewater flows should consider the following:

Infiltration/inflow is a function of the collection system and is not directly related to population. It generally does not increase with population unless the collection system is enlarged.

Any anticipated increases in commercial and industrial flows should be included.

A population equivalent should be estimated and included for any facilities, such as schools, that serve population that does not live in the planning area.

Where there is an existing community sewerage system, samples of the raw sewage should be taken and analyzed for parameters relevant to the permit requirements. Future wastewater characteristics can then be estimated, taking into account any expected changes in infiltration/inflow and loadings contributed by industrial users.

If no existing flow information is available (in the case of an unsewered community) reasonable "rule of thumb" estimates may be used to project future flows and wastewater characteristics.

The future environment without the project should be discussed, so that a proper environmental review can

be performed. This helps to document the need for the project by pointing out unacceptable conditions, such as water quality violations and health hazards.

CHAPTER 6: DEVELOPMENT OF ALTERNATIVES

The primary objective of Facility Planning is to establish the needs of a community related to wastewater treatment, then, through a systematic evaluation of alternatives, propose a cost-effective means of meeting those needs.

There will be a number of possible solutions to meeting the needs of a community for wastewater collection and treatment. The consulting engineer should evaluate a reasonable number of alternatives, presenting them in sufficient detail so that a preliminary evaluation can be made.

Where an existing facility exists, one of the alternatives that should be considered is the optimization, expansion, and/or upgrade of that facility. Even where a new treatment works is required, it may be possible to utilize components of the old works as part of the new system.

In defining the alternatives, the handling, treatment, and ultimate disposal of sludge generated in the treatment processes should be given careful consideration. See chapter 8 below for more information on sludge management.

At this point in the Facility Plan it may be advantageous to perform a preliminary screening of the alternatives proposed, thereby eliminating those that can readily be shown to be unfeasible or uneconomical. Those alternatives remaining can be considered to be the principal alternatives.

CHAPTER 7: EVALUATION OF PRINCIPAL ALTERNATIVES

A detailed economic analysis should be performed for each of the principal alternatives so the most cost-effective alternative can be identified. This is accomplished by calculating the total life cycle costs for the twenty-year planning period. This may be expressed as a present worth sum or as an equivalent uniform annual cost. The discount rate to be used in the cost-effective analyses should be the current rate provided by the EPA for the Construction Grants Program (if available) or a rate in the range of 6% to 8%. If a substantially different rate is used, it must be justified.

When a treatment works is part of the project, the Reliability Class that the facility must be designed to meet should be considered. Each Reliability Class defines specific requirements for multiple units and back-up units for the major components of a treatment works. These requirements will affect the estimated capital costs for the principal alternatives considered. Please refer to our *Guidance on Component Reliability Criteria for State Revolving Loan Fund Projects*.

While the economic analysis is normally the primary criterion for selecting an alternative, there are other considerations that may affect the selection. Examples of other relevant criteria are reliability, energy use, process complexity, environmental impacts, public acceptance, and the professional judgment of the consulting engineer. After evaluation and comparison of principal alternatives, a project is selected which is the most economical means of meeting the applicable effluent, water quality, and public health requirements

over the design life of the facility, while recognizing environmental and other non-monetary considerations.

CHAPTER 8: SELECTED PLAN DESCRIPTION

This section should present a description of the proposed wastewater treatment works. A more detailed breakdown of capital, operation and maintenance costs should be presented, with assumptions explained and justified. While a complete design is not expected during the planning phase, there should be presentation of relevant design parameters to insure that all major components of the system have been included, cost estimates are reasonable, State design criteria for major components are met, and that the proposed process is capable of meeting effluent limits. Again, the Reliability Class that a treatment works will need to meet should be taken into consideration.

The total cost of the project to users should be calculated. This includes: capital and financing costs; the costs for operation, maintenance and replacement of components during the useful life of the works; and other costs such as hookup fees and front footage assessments. These costs should be presented as estimated annual or monthly costs to residential, commercial, and industrial users.

Federal law requires that the SRF may provide assistance only for publicly owned projects necessary for compliance with enforceable requirements of the Clean Water Act, for correction of public health problems, or for achieving and maintaining compliance with applicable water quality standards. A reasonable amount of reserve capacity for future growth may be incorporated into the project provided that the project is primarily to correct existing problems. Any portions of the project that do not meet this criteria are not eligible for funding through the SRF (e.g. land not used for treatment, any work on building or house connections, excess reserve capacity, etc.). The Facility Plan must identify any portions of the project that are not eligible and state the source of funding for those portions.

The level of detail describing relevant design parameters varies from project to project, and depends to a large degree on size and complexity. Representative design parameters to be described include: major process features; unit processes and sizes; a schematic flow diagram of the treatment process; a map of the proposed collector and interceptor sewers, showing lengths and sizes of pipe; and design criteria such as detention times, overflow rates, process loading, computed removal efficiencies, and design flows.

The Facility Plan should include a brief description of the treatment, handling, and ultimate reuse or disposal of sludge. **Also a more detailed Sludge Management Plan must be submitted as a separate document.** The DEQ project engineer will forward this document to the appropriate person(s) in DEQ for approval. A permit for sludge reuse or disposal will be required if one has not already been issued. As a minimum, the Sludge Management Plan should address the following:

1. A brief description of sludge processing, with a flow diagram.
2. The estimated quantity of the sludge to be produced annually.

3. The estimated quality of the sludge to be produced. For sludge to be disposed of in a permitted municipal solid waste landfill, it is necessary to meet the requirements of 40 CFR Parts 257 and 258. 40 CFR Part 503 contains the requirements for sludge to be land applied, incinerated, or placed on a surface disposal site. Of particular importance in 40 CFR Part 503 are the Class "A" and Class "B" standards for pathogen reduction and the pollutant concentration limits of Table 1 and Table 3 in 503.13.

4. The ultimate method proposed for sludge reuse or disposal. Some examples of beneficial use of biosolids (sludge) that might be considered are sending the sludge to a commercial composting facility or to a facility for further processing to produce an exceptional quality material, or disposal in a commercially permitted landfarm. Other scenarios are possible.

5. The type of carrier(s) and the route(s) to be used in transporting sludge to the final reuse or disposal site.

6. Applicable permits or evidence of permit applications for all disposal sites.

For treatment facilities such as facultative lagoons, that may not need to dispose of sludge for decades, the Sludge Management Plan should estimate the number of years before sludge disposal will be necessary. The Plan should propose a method of ultimate disposal and state that a plan for sludge disposal will be submitted to DEQ when the time comes to dispose of sludge.

A Public Hearing will be held which presents information on the recommended plan from the Facility Plan and any potential environmental impacts from the Environmental Information Document. The following information from the Facility Plan must be discussed:

- Recommended treatment process
- Design capacity
- Discharge location
- Collection system improvements (if any)
- Capital Cost
- O&M costs
- Costs to users including:
 - O&M costs
 - Debt Service
 - Any other costs

Additional information on potential environmental impacts that must be presented is addressed in the instructions for preparing the Environmental Information Document.

A transcript of the Public Hearing is required and is generally included in the Environmental Information Document.

CHAPTER 9: ARRANGEMENTS FOR IMPLEMENTATION

A plan for implementing the proposed project should be presented. This involves scheduling, financial arrangements, and public participation. It is assumed that the SRF will be a major source of funds since the Facility Plan is prepared to meet the SRF requirements. The financial information should therefore conform the SRF program requirements.

A schedule for the design and construction of the proposed facility should be presented. This should be based on the assumption that the SRF loan and any other financing required is obtained within a reasonable time frame. The construction schedule should be in agreement with any enforcement actions by EPA or DEQ.